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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,469	12/15/2000	Richard Kenneth McGuire	GB9-2000-0097- US1	9668

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EXAMINER
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STEELMAN, MARY J

ART UNIT	PAPER NUMBER
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2122

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DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/738,469

Applicant(s)

MCGUIRE ET AL.

Examiner

Mary J. Steelman

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. This action is in response to Amendment A filed 02/09/2004. Claims 1-14 are pending.

***Drawings***

2. In view of the Amendments and Applicant's comments, the prior objections to the Drawings are hereby withdrawn.

***Specification***

3. The use of the trademark JAVA has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Applicant is directed to sun.com for specifics on the JAVA trademark:

**1. Rules of Proper Trademark Use.**

**A. Use Sun Trademarks as Adjectives, Never as Nouns.**

Please follow every Sun trademark with an appropriate noun consisting of the Sun product or service that is branded with the mark. Sun trademarks are adjectives and may not be used as nouns, or alone as a shorthand way of identifying a product or service. The Sun trademark should be used as an adjective describing a product or service of Sun Microsystems.

***Claim Rejections - 35 USC § 112***

4. In view of Applicant's amendment to claim 5, the prior 35 USC 112 2<sup>nd</sup> paragraph rejection is hereby withdrawn.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6430569 B1 to Bracha et al., in view of US Patent 6654793 B1 to Wollrath et al.

Per claim 1, Bracha disclosed:

-two or more class loaders... (Col. 3, lines 48-50, "...environment that employs multiple runtime name spaces, user-defined class loaders...")

-a constraint checking mechanism so that where a first class file loaded by a first class loader makes a symbolic reference to a second class file loaded by a second class loader, said symbolic reference including a descriptor of a third class file, the constraint enforces that the first and second class files agree on the identity of the third class file, (See fig. 2, #210, fig. 3, #310, col. 3, line 51, "...creating and maintaining a set of loader constraints...", col. 5, lines 1-7, "...system 100 identifies a class that makes a symbolic reference to a class or attribute that is contained in another class when system 100 executes an instruction contained in class...that references a method...in a class...Resolving such a symbolic reference involves a loaded class cache (LCC) and a constraint table (CT)).", col. 4, lines 51-56, "...system identifies a class that makes a symbolic reference to a class or attribute that is contained in another class. While resolving...system 100 imposes a constraint...")

-said constraint checking mechanism including means for creating a data structure for recording a constraint between two class loaders, wherein said data structure includes, for a class loader which has loaded a class file that contains a symbolic reference to another file, a first parameter

denoting the class file which is identified by a descriptor in said symbolic reference, and a second parameter denoting the class loader which loaded said another class file. (Col. 5, lines 1-23, "...Resolving such a symbolic reference involves a loaded class cache (LCC) and a constraint table (CT). A loaded class cache maps a class name and an initiating class loader to the runtime representation of a class type...the JVM checks...to determine whether E (a class name) has previously been loaded by L1...defining loader...If so, the reference is resolved...If not, the JVM loads the referenced class...The CT maps a class name to a set of pairs. Each pair consists of a class type and a set of initiating class loaders. Given a class name, one can extract from the CT all constraints placed on the class...")

Bracha failed to disclose: a data structure for recording a constraint as an asymmetric relationship between two class loaders. However, Wollrath disclosed (col. 2, lines 58-64), "...the stub retrieval and loading subsystem effects the retrieval and loading for a program operating in one address space provided by one computer, of stub class instances to effect the remote invocation of methods which are provided by objects operating in another address space, which may be provided by the same computer or a different computer..." At col. 6, lines 47-52, "...the server computer provides a skeleton which identifies the particular classes and methods which have been exported by the server computer and information as to how it may load the respective classes and initiate processing of the particular methods...". At col. 8, lines 18-25, "...enables the computer that is processing the invoking JAVA program to communicate with the name server computer to obtain information which can be used in invoking the remote method...including a parameter identifying the class and method to be remotely invoked..."

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Wollrath disclosed a technique whereby the server maintains information regarding the classes and loaders.

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time of the invention, to have modified Bracha's invention of class loaders and constraint checking mechanisms to include Wollrath's invention of a server maintaining information regarding the classes and loaders because networked systems are common and enforcing the constraints with respects to multiple class files is important for proper program operation.

Per claim 2:

-data structure further includes a third parameter denoting the object reference to said class file which is identified by a descriptor in said symbolic reference, as loaded by the class loader with which the data structure is associated. (Col. 5, line 8-12)

Per claim 3:

-data structure further includes a fourth parameter, denoting the object reference to said class file which is identified by a descriptor in said symbolic reference, as loaded by said class loader which loaded said another class file. (Col. 5, line 15, "defining loader")

Per claim 4:

-comparing said third and fourth parameters, to identify a constraint violation if they do not match. (Col. 3, lines 60-67, "...at the earliest time that the type is loaded by both loaders- methods and apparatus verify that the constraint has been met.", col. 5, lines 20-23, "Given a

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class name, one can extract from the CT all constraints placed on the class.”, & 48-54, “While resolving the symbolic reference, system 100 imposes a constraint that requires that the type of the referenced attribute...when loaded by a loader that defines the referencing class...be the same as the type for the referenced attribute ...when loaded by a loader that defines the referenced class.”)

Per claim 5:

Copying said third parameter into a data structure associated with said class loader which loaded said another class file. (Col. 5, lines 28-29, “To create an entry...(in the loaded class cache)...the JVM creates an LCC entry indexed by the key...”)

Per claims 6, 8 and 12:

-each class loader has its own cache, and the data structure for a class loader is stored in the cache for that class loader. (Col. 3, lines 49-52, “...multiple runtime name spaces, user-defined class loaders...” & col. 5, lines 6-8, “...loaded class cache...”)

Per claims 7, 11, and 13:

-providing two or more class loaders for loading program class files into the system and a constraint checking mechanism so that where a first class file loaded by a first class loader makes a symbolic reference to a second class file loaded by a second class loader, said symbolic reference including a descriptor of a third class file, the constraint enforces that the first and

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second class files agree on the identity of the third class file, (See limitations addressed in claim 1.)

-identifying the need for a constraint between said first and second class loaders in respect of said third class file; (Col. 3, lines 57-58, "If a class references an attribute that is contained in another class, a constraint is established.")

-creating a data structure for each of said first and second class loaders; (Col. 3, line 50-52, "This is accomplished by creating and maintaining a set of loader constraints that are dynamically updated as class loading takes place.")

-setting a pointer from the data structure for the first class loader to the data structure for the second class loader to identify the latter as being the constraint parent. (Col. 5, line 9, "...initiating class loader...")

Additionally, see rejection of claim 1 above.

Per claims 9 & 10:

-resolving said third class file to a first object reference by the first class loader; copying the first object reference from the third class file to the data structure for the second class loader; resolving said third class file to a second object reference by the second class loader; (Col. 5, lines 8-19.)

-checking that said first and second object references are identical to ensure that said constraint has not been violated. (Col. 3, lines 61-62, "...verify that the constraint has been met.")

Per claim 11:

(See limitations addressed in claims 1, 2, and 7.)

Per claim 14:

-updating comprises updating said second data structure with the reference. (Col. 3, line 52,  
“...dynamically updated as class loading takes place.”

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1, 7, and 11 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Steelman, whose telephone number is (703) 305-4564. The examiner can normally be reached Monday through Thursday, from 7:00 A.M. to 5:30 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on (703) 305-4552.

The fax phone numbers are (703) 872-9306 for regular communications and for After Final communications. Any inquiry of a general nature or relating to the status of this

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application or proceeding should be directed to the receptionist whose telephone number is (703)  
305-3900.

Mary Steelman



04/15/2004



**ANTONY NGUYEN-BA  
PRIMARY EXAMINER**